

Evolution[®] Li-ion battery

Saft's proven ultra-compact solution for telecom applications

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Saft: Providing energy for today's telecom installations



Saft has a complete range of specialised batteries for a wide variety of telecom installations. Saft's advanced products provide an efficient and reliable backup power system to ensure continuity of service for both on-grid and stand-alone sites, anywhere in the world.

Saft's telecom batteries are designed to provide OEMs and operators with the ideal combination of high performance, maximum reliability, long life and efficient operation over a wide temperature range. They also offer safe operation and low maintenance throughout their life cycle.

Lithium-ion from Saft: Safe and proven

Saft has more than 15 years of experience with Li-ion technology in a wide range of applications from mobility, hybrid and pure electrical vehicles, satellites and large installations for industrial or renewable energy markets.

Saft has used its significant Li-ion expertise to meet the demanding needs of a new generation of telecom applications:

- Saft's Li-ion Intensium 1 and Intensium 3 are recognised for their high power capabilities;
- Saft's Li-ion Evolion® offers high volumic energy and allows compact installation;
- And all Saft Li-ion batteries share a common benefit of a maintenance-free package.

With Saft's significant track record in Li-ion, telecom equipment professionals can be sure of getting safe, stable and very dependable back-up.

Evolution[®]: Big benefits...



Telecom infrastructure providers, wireline service providers, wireless service providers, OEMs: You need a compact, highly efficient and safe backup power system for your telecom installations. Evolution[®] offers a unique combination of floating capability and high cycling performance.

... in a small package

Evolution[®]'s compact and lightweight design makes it possible to deliver the maximum energy backup in the limited space available within telecom cabinets. Its high volumic energy means that it only needs 50% of the space required by a conventional VRLA battery. In locations where space is at a premium, Evolution[®] is the answer. Because it uses lightweight Li-ion technology, Evolution[®] also addresses the challenges of floor loading limitations in Central Offices.

... with the lowest Total Cost of Ownership (TCO)

Saft knows that only the Total Cost of Ownership (TCO) represents the true value of owning a battery. That's why our telecom batteries are designed to

provide OEMs and operators with the ideal combination of high performance, maximum reliability, long life and efficient operation.

Beyond just the one-time purchase cost, you must consider installation and maintenance needs, service intervals and life expectancy when you choose batteries for your telecom installation.

With their noted levels of reliability throughout the operating life cycle, their extended service cycles and the fact that they require absolutely no maintenance, Evolution[®] batteries offer the industry's lowest Total Cost of Ownership over the life of a telecom system.



With Evolution[®], you get:

- a compact, low-weight package
- low TCO
- the same life as the telecom equipment it serves
- no need for any maintenance
- environmentally-friendly materials

Evolution[®]: Universal compatibility



Evolution[®] batteries are suitable for all telecom sites and environments — no matter whether your equipment is inside or outside, on-grid or off-grid, in a hot place or a cold one, in a nearby site or a remote location, on existing installations or new applications.

High performances in floating

For back-up applications at indoor or outdoor on-grid sites in countries where the grid is reliable and stable, you will appreciate the high performances of Evolution[®] in floating.

Excellent cyclo-floating performances

For back-up applications at outdoor on-grid sites in emerging economies where the grid suffers from poor reliability and significant outages, you will appreciate the advantages of Evolution[®]'s cyclo-floating abilities in any climate, hot or cold.

High and deep cycling capabilities

For off-grid hybrid applications, where power is sourced from generators or from intermittent energy sources (photovoltaic panels or wind turbines), Evolution[®]'s high cycling capabilities will provide you the most efficient energy storage.

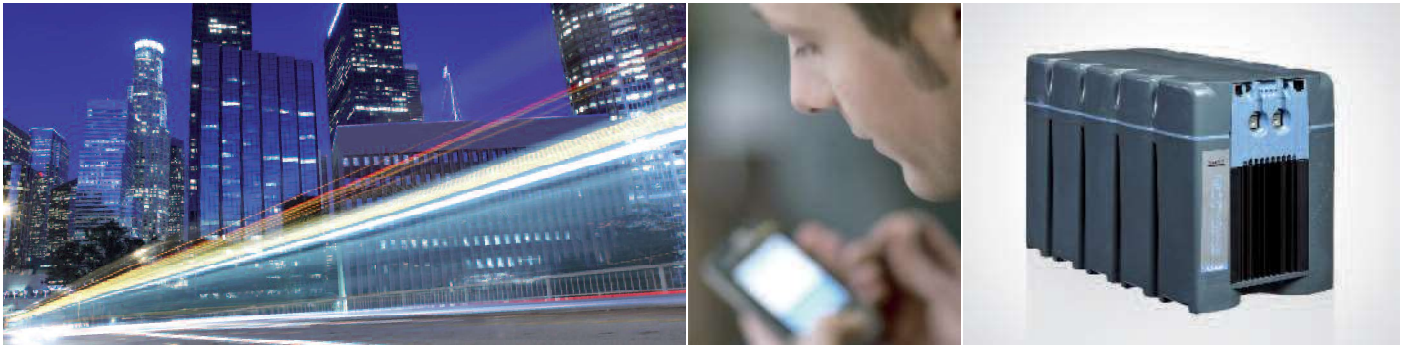
Lightweight packages

Evolution[®]'s use of lightweight Li-ion technology also addresses the challenges of floor loading limitations in Central Offices, and other applications like rooftop or pole mounted. This makes it feasible for you to co-locate the battery system adjacent to your transport equipment racks, even on raised floors.

Evolution[®] is suitable for:

- BTS: Base Transceiver Stations,
 - OSP: Wireline Outside Plants,
 - ONU: Optical Node Units,
 - BSC: Base Station Controllers,
 - MSC: Mobile Switching Centres,
 - ANT: Access Node Terminal,
 - CO: Central Offices.
-

A compact and universal choice



Small and lightweight

Make no mistake: behind its small size, Evolion® brings its users big benefits. When you need high energy storage capabilities in the limited space available within telecom cabinets, Evolion® is the right choice.

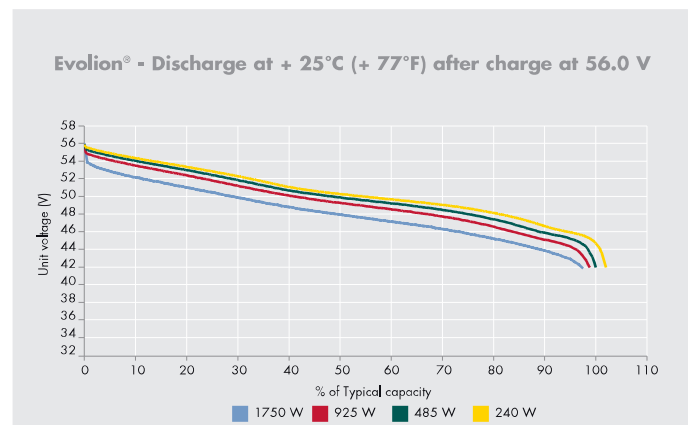
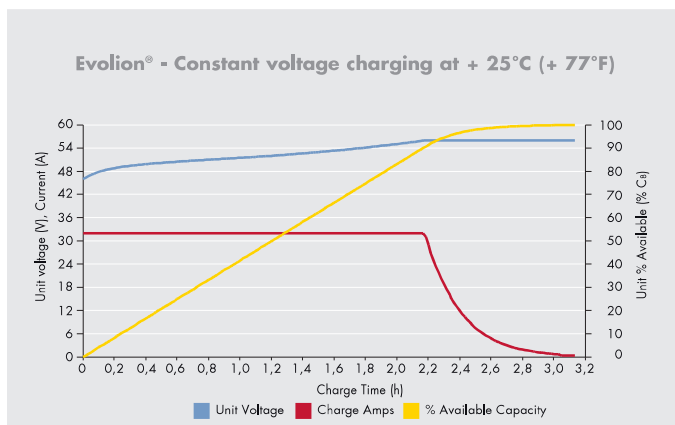
- Four to ten times lighter
- 50% to 85% less volume than conventional batteries, depending on application.

Universally deployable for all possible needs

Evolion® can be used for cycling and floating, inside and outside, at high and low temperatures, in all telecom power equipment, for all telecom applications, everywhere. Manage your supply chain and your inventory with one single kind of battery.

- High charging current acceptance up to 90% recovered after 2.5 hours
- Very round trip efficiency: > 95%
- Wide operating temperature range: from - 40°C to + 75°C
- Deep cycling capability
- No need for external cooling or heating devices
- Waterproof up to 6''
- Designed for massive paralleling

Evolion®
Li-ion
battery



Evolion[®]: a safe choice



Same life expectancy as telecom equipment

Evolion[®] has the same life expectancies as the telecom equipment it serves.

- Long float life:
 - 20 years at + 20°C (+ 68°F)
 - > 10 years at + 40°C (+ 104°F)
- High cycle life:
 - 4 300 cycles 80% DOD
 - 8 200 cycles 50% DOD

As a consequence, in many cases, there is no need for a battery replacement during the life of the telecom equipment.

Smart and easy management

Evolion[®] is easy to install, easy to use and never needs maintenance.

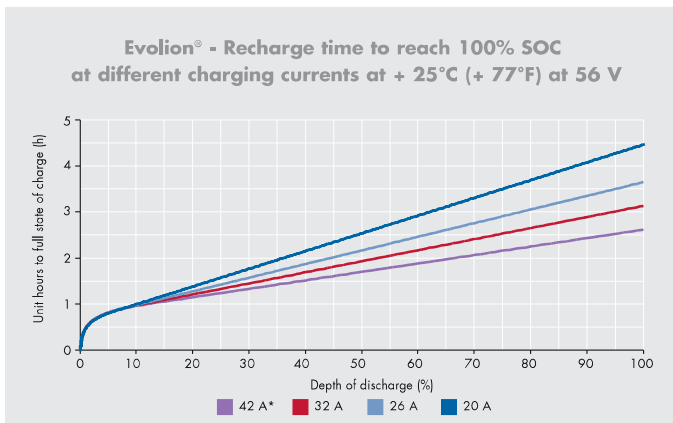
- Sealed design means no maintenance requirements
- Quick and easy installation process
- Smart energy management capabilities
- No equalising charge

Low environmental impact

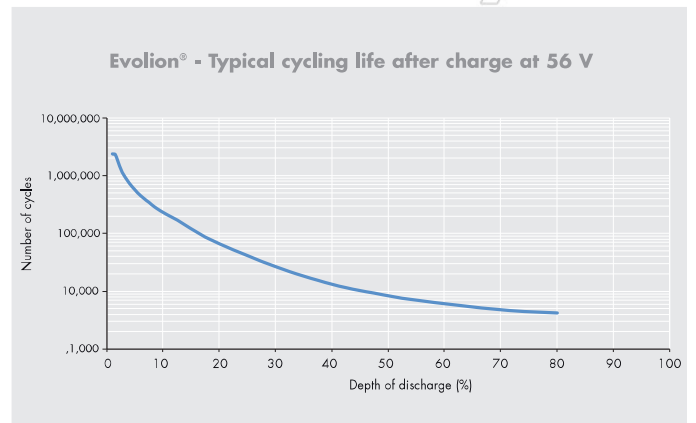
You strive to ensure a minimal environment impact. So does Saft. Our commitment to the highest standards of environmental stewardship is well known, and Evolion[®] benefits from it.

- Reduced energy consumption
- Reduced carbon footprint
- Recyclable
- Lead-free
- Life cycle assessment shows Global Warming Potential (GWP equivalent CO₂ emission) reduced by 85%

Evolion[®] Li-ion battery

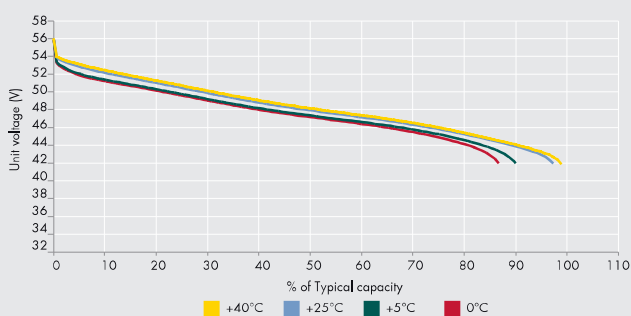


* Current value to be used for temperatures between +30°C to +50°C.





Evolion® - Typical discharges at 1750 W at different temperatures



Technical characteristics of Evolion® batteries		Unit
Nominal characteristics		
Voltage	48 V	
Typical capacity at C8 at + 25°C (+ 77°F)	77 Ah(*)	
Rated capacity at C8 at + 25°C (+ 77°F)	74 Ah	
Typical energy at C8 at + 25°C (+ 77°F)	3900 Wh	
Volumetric energy density	171 Wh/l	
Gravimetric energy density	130 Wh/kg	
Physical characteristics		
Width	216 mm / 8.5"	
Height	260 mm / 10.2"	
Depth	404 mm / 15.9"	
Weight	30 kg / 66 lbs	
Electrical characteristics		
Voltage window	42.0 V to 56.0 V	
Charge voltage range	52.0 V to 56.0 V	
Max. continuous discharge current	44 A	
Typical recharge time	As less than 3h	
Recommended max. charging current	32 A	
Round trip efficiency (Wh)	> 95%	
Operating conditions		
Calendar life (+ 20°C/+ 68°F)	20 years	
Calendar life (+ 40°C/+ 104°F)	> 10 years	
Cycle life (+ 20°C/+ 68°F)	80% DOD: 4300 cycles	
	50% DOD: 8200 cycles	
Operating temperature	- 40°C to + 75°C	
	- 40°F to + 167°F	
Storage duration (+ 15°C/+ 35°C)	12 months	
(+ 59°F/+ 95°F)	[no electrical maintenance]	

(*) Depending on the application, the battery can be assembled in parallel.

Evolion® batteries conform and certify to all major quality, safety and environmental standards

Designed to comply with:

Safety

- Telcordia GR 3150 Level 1
- IEC 60950
- CE
- UL 1642

EMC

- EN 300 386
- EN 61 000

Transport

- UN 3480

Environment

- ETSI 300 019
- EC marking



Saft is committed to the highest standards of environmental stewardship

As part of its environmental commitment, Saft gives priority to recycled raw materials over virgin raw materials, reduces its plants' air and water releases year after year, minimizes water usage, reduces fossil energy consumption and associated CO₂ emissions, and ensures that its customers have recycling solutions for their spent batteries.

Regarding industrial batteries, maintains long standing partnerships with collection companies in most EU countries, in North America and in other countries. This collection network receives and dispatches our customers' batteries at the end of their lives to fully approved recycling facilities, in compliance with the laws governing trans-boundary waste shipments.

Saft has selected a recycling process for industrial lithium-ion cells with very high recycling efficiency. A list of our current collection points is available on our web site. In other countries, Saft assists users of its batteries in finding environmentally sound recycling solutions. Please contact your sales representative for further information.



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